2 (Amended). A system as defined in claim 1 in which the cache miss prediction element [generates] is configured to generate the cache miss prediction value based on a particular one of a plurality of cache memory management methodologies.

3 (Amended). A system as defined in claim 2 in which one of said cache memory management methodologies is a FIFO (first-in/first-out) methodology, the cache miss prediction element [generating] being configured to generate the cache miss prediction value in accordance with:

$$1 = \sum_i \frac{A_i}{M + \frac{SA_i}{E_i}}$$

where "M" represents the cache miss prediction value, "S" represents the selected cache memory size value, "A_i" represents the file retrieval activity value for a file "i," and "E_i" represents the extent of activity value for the file "i."

4 (Amended). A system as defined in claim 3 in which the cache miss prediction element [determines] is configured to determine the cache miss prediction value "M" using a binary search methodology over the interval

$$0 \leq M \leq \sum_i A_i = A$$

where "A" represents the total activity over the time interval.

5 (Amended). A system as defined in claim 2 in which one of said cache memory management methodologies is a FIFO (first-in/first-out) methodology, the operational statistics gathering element further [gathering] being configured to gather a packet re-reference value indicating a number of

times a portion of a file, identified as a packet, is referenced during the time interval, the cache miss prediction element generating the cache miss prediction value in accordance with:

$$1 = \sum_i \frac{\frac{A_i}{R_i}(R_i - 1 - H(i,S))}{M + \frac{S\left(\frac{A_i}{R_i}\right)}{E_i}}$$

where "M" represents the cache miss prediction value, H(i,S) corresponds to the number of cache hits per packet, "S" represents the selected cache memory size value, "A_i" represents the file retrieval activity value for a file "i," "E_i" represents the extent of activity value for the file "i," and "R_i" represents the packet re-reference value for file "i."

6 (Amended). A system as defined in claim 5 in which the cache miss prediction element [determines] is further configured to determine the cache miss prediction value "M" using a binary search methodology over the interval

$$0 \le M \le \sum_i A_i = A$$

where "A" represents the total activity over the time interval.

7 (Amended). A system as defined in claim 2 in which one of said cache memory management methodologies is an LRU (least-recently used) methodology, the operational statistics gathering element being further [gathering] configured to gather a packet re-reference value indicating a number of times a portion of a file, identified as a packet, is referenced during the time interval, the cache miss prediction element [generating] being configured to generate the cache [mis] miss prediction value in accordance with:

$$1 = \sum_i \frac{\left(\frac{A_i T_i}{R_i}\right) M + \left(\frac{A_i SI}{R_i}\right)}{\left(SI + \frac{SA_i T_i}{E_i R_i}\right) M + \left(\frac{A_i I}{E_i R_i}\right) S^2}$$

where "M" represents the cache miss prediction value, H(i,S) corresponds to the number of cache hits per packet, "S" represents the selected cache memory size value, "A_i" represents the file retrieval activity value for a file "i," "E_i" represents the extent of activity value for the file "i," "R_i " represents the packet re-reference value for file "i," and "I" represents the duration of the time interval.

8 (Amended). A system as defined in claim 7 in which the cache miss prediction element [determines] is further configured to determine the cache miss prediction value "M" using a binary search methodology over the interval

$$0 \le M \le \sum_i A_i = A$$

where "A" represents the total activity over the time interval.

9 (Amended). A method for generating an operational assessment of a cache memory in a digital data processing system for respective cache memory sizes comprising the steps of:

A. gathering operational statistics over a time interval, including a file information retrieval activity value and [a] an extent of activity value for each file accessed during the time interval;

B. generating a cache miss prediction value in response to the operational statistics gathered during the operational statistics gathering step, and a cache memory size value; and

C. adjusting the cache memory size in response to the cache memory size value generated during the cache miss prediction step for a selected one of said cache miss prediction values.

13 (Amended). A method as defined in claim 10 in which one of said cache memory management methodologies is a FIFO (first-in/first-out) methodology, the operational statistics gathering element further gathering a packet re-reference value indicating a number of times a portion of a file, identified as a packet, is referenced during the time interval, during the cache miss prediction step the cache miss prediction value being generated in accordance with:

$$1 = \sum_i \frac{\frac{A_i}{R_i}(R_i - 1 - H(i,S))}{M + \frac{S\left(\frac{A_i}{R_i}\right)}{E_i}}$$

where "M" represents the cache miss prediction value, H(i,S) corresponds to the number of cache hits per packet, "S" represents the selected cache memory size value, "A_i" represents the file retrieval activity value for a file "i," "E_i" represents the extent of activity value for the file "i," and "R_i " represents the packet re-reference value for file "i."

15 (Amended). A method as defined in claim 10 in which one of said cache memory management methodologies is an LRU (least-recently used) methodology, during the operational statistics gathering step a packet re-reference value being further gathered indicating a number of times a portion of a file, identified as a packet, is referenced during the time interval, the cache miss prediction element generating the cache [mis] miss prediction value in accordance with:

$$1 = \sum_i \frac{\left(\frac{A_i T_i}{R_i}\right) M + \left(\frac{A_i SI}{R_i}\right)}{\left(SI + \frac{SA_i T_i}{E_i R_i}\right) M + \left(\frac{A_i I}{E_i R_i}\right) S^2}$$

where "M" represents the cache miss prediction value, H(i,S) corresponds to the number of cache hits per packet, "S" represents the selected cache memory size value, "A_i" represents the file retrieval activity value for a file "i," "E_i" represents the extent of activity value for the file "i," "R_i " represents the packet re-reference value for file "i," and "I" represents the duration of the time interval.

Add the following new claims:

17. A computer program product for use in connection with a computer to generate an operational assessment of a cache memory in a digital data processing system for respective cache memory sizes, the computer program product comprising a computer-readable medium having encoded thereon a cache miss prediction module configured to enable said computer to generate a cache miss prediction value in response to operational statistics gathered over a time interval, including a file information retrieval activity value and an extent of activity value for each file accessed during the time interval, and a cache memory size value.

18. A computer program product as defined in claim 17 in which the cache miss prediction module is configured to enable said computer to generate the cache miss prediction value based on a particular one of a plurality of cache memory management methodologies.

19. A computer program product as defined in claim 18 in which one of said cache memory management methodologies is a FIFO (first-in/first-out) methodology, the cache miss prediction module being configured to generate the cache miss prediction value in accordance with:

$$1 = \sum_i \frac{A_i}{M + \frac{SA_i}{E_i}}$$

where "M" represents the cache miss prediction value, "S" represents the selected cache memory size value, "Ai" represents the file retrieval activity value for a file "i," and "Ei" represents the extent of activity value for the file "i."

20. A computer program product as defined in claim 19 in which the cache miss prediction module is configured to determine the cache miss prediction value "M" using a binary search methodology over the interval

$$0 \le M \le \sum_i A_i = A$$

where "A" represents the total activity over the time interval.

21. A computer program product as defined in claim 18 in which one of said cache memory management methodologies is a FIFO (first-in/first-out) methodology, the cache miss prediction module being further configured to generate the cache miss prediction value in accordance with:

$$1 = \sum_i \frac{\frac{A_i}{R_i}(R_i - 1 - H(i,S))}{M + \frac{S\left(\frac{A_i}{R_i}\right)}{E_i}}$$

where "M" represents the cache miss prediction value, H(i,S) corresponds to the number of cache hits per packet, "S" represents the selected cache memory size value, "Ai" represents the file retrieval activity value for a file "i," "Ei" represents the extent of activity value for the file "i," and "Ri " represents a packet re-reference value indicating a number of times a portion of a file, identified as a packet "i," is referenced during the time interval.

22. A computer program product as defined in claim 21 in which the cache miss prediction module is configured to enable said computer to determine the cache miss prediction value "M" using a binary search methodology over the interval

$$0 \leq M \leq \sum_i A_i = A$$

where "A" represents the total activity over the time interval.

23. A computer program product as defined in claim 18 in which one of said cache memory management methodologies is an LRU (least-recently used) methodology, the cache miss prediction module being further configured to enable the computer to generate the cache miss prediction value in accordance with:

$$1 = \sum_i \frac{\left(\frac{A_i T_i}{R_i}\right) M + \left(\frac{A_i SI}{R_i}\right)}{\left(SI + \frac{SA_i T_i}{E_i R_i}\right) M + \left(\frac{A_i I}{E_i R_i}\right) S^2}$$

where "M" represents the cache miss prediction value, H(i,S) corresponds to the number of cache hits per packet, "S" represents the selected cache memory size value, "Ai" represents the file retrieval activity value for a file "i," "Ei" represents the extent of activity value for the file "i," "Ri" represents a packet re-reference value indicating a number of times a portion of a file, identified as a packet "i," is referenced during the time interval, and "I" represents the duration of the time interval.

24. A computer program product as defined in claim 23 in which the cache miss prediction module is configured to enable said computer to determine the cache miss prediction value "M" using a binary search methodology over the interval

$$0 \leq M \leq \sum_i A_i = A$$